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Examiner: George R. KOCH	Sumit Bhattacharya
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USPTO	May 15, 2006
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PHONE NUMBER:	SENDER'S REFERENCE NUMBER:
	12553/108
RE:	YOUR REFERENCE NUMBER:
Application No.: 10/817,568	Group Art Unit: 1734

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APPEAL BRIEF

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FEE TRANSMITTAL for FY 2005 Effective 10/01/2004. Patent fees are subject to annual revision.		Complete if Known	
		Application Number	10/817,568
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Filing Date	April 1, 2004
		First Named Inventor	Ming Gao YAO
TOTAL AMOUNT OF PAYMENT (\$) 500.00		Examiner Name	George R. KOCH
		Art Unit	1734
		Attorney Docket No.	12553/108

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Total Claims: 20 ** = 50.00 X 50.00 = 2500.00 Independent Claims: 3 ** = 200.00 X 200.00 = 400.00 Multiple Dependent: 1 X 180.00 = 180.00 SUBTOTAL (3) (\$) 500.00		Other fee (specify) _____ *Reduced by Basic Filing Fee Paid SUBTOTAL (3) (\$) 500.00																																												

SUBMITTED BY Name (Print/Type): Sumit Bhattacharya Signature: <i>Sumit Bhattacharya</i>		Registration No. (Attorney/Agent): 51,469 Telephone: (408) 975-7500	
Date: May 15, 2006		Complete (if applicable)	

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Patent

Attorney Docket No.: 12553/108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Ming Gao YAO
SERIAL NO. : 10/817,568
FILED : April 1, 2004
FOR : TREATMENT SYSTEM AND METHOD FOR A HEAD
GIMBAL ASSEMBLY STATIC ALTITUDE CONTROL
GROUP ART UNIT : 1734
EXAMINER : George R. KOCH

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Date: May 15, 2006	Signature <u>Barbara Vance</u> Barbara Vance

ATTENTION: Board of Patent Appeals and Interferences**APPEAL BRIEF**

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on March 15, 2006.

05/17/2006 EFLORES 00000084 110600 10817568

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1. REAL PARTY IN INTEREST

The real party in interest in this matter is SAE Magnetics (H.K.) Ltd. (Recorded April 1, 2004; Reel/Frame 015187/0803).

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals.

3. STATUS OF THE CLAIMS

Claims 1-19 are pending in this application. Claims 8-11 were withdrawn from consideration. Claims 1-7 and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nemoto (U.S. Patent No. 6,284,073), Kamigama (U.S. Pub. No. 2002/0029461) and Johnson (U.S. Patent No. 6,640,423). This appeal is an appeal from the rejection of claims 1-7 and 12-19.

4. STATUS OF AMENDMENTS

The claims listed on page A-1 of the Appendix attached to this Appeal Brief reflects the present status of the claims.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is directed to attaching a slider to a head suspension. More specifically, the present invention pertains to controlling roll static attitude and pitch static attitude during the attachment process.

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The embodiment of Independent claim 1 generally describes a system comprising of a loading fixture to load and support a suspension when a micro-actuator coupled to a slider is attached (*see e.g.*, paragraph [0023], Figure 9a-d, 901) with an adhesive controller to apply and cure an adhesive substance to the suspension (*see e.g.*, paragraph [0024], Figure 9a-d, 904); a pitch static attitude and roll static attitude (PSA/RSA) monitor to take a first measurement of the pitch static attitude and roll static attitude of the micro-actuator on the suspension (*see e.g.*, paragraph [0029], Figure 11, 1135); a gap monitor to take a second measurement of a gap between the micro-actuator and the suspension and a rotatable positioning tool to hold the micro-actuator (*see e.g.*, paragraph [0029], Figure 11, 1140) and the slider in a position relative to the suspension for attachment and to adjust the position of the micro-actuator and the slider in response to the first and second measurements (*see e.g.*, paragraph [0029], Figure 11, 1145).

The embodiment of Independent claim 12 generally describes a positioning device, comprising a pitch static attitude and roll static attitude (PSA/RSA) monitor to take a first measurement of a pitch static attitude and roll static attitude of a micro-actuator on a suspension (*see e.g.*, paragraph [0029], Figure 11, 1135); a gap monitor to take a second measurement of a gap between the micro-actuator and the suspension and a rotatable positioning tool to hold the micro-actuator in a position relative to the suspension for attachment (*see e.g.*, paragraph [0029], Figure 11, 1140) and to adjust the position of the micro-actuator in response to said measurements (*see e.g.*, paragraph [0029], Figure 11, 1145).

Figure 1 illustrates a hard disk drive design typical in the art. **Figure 2** illustrates a typical head gimbal assembly having a U-shaped micro-actuator. **Figure 3** illustrates a prior art method for coupling a slider to a micro-actuator. **Figures 4a-e** illustrate a prior art method for

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coupling the slider and micro-actuator to the head suspension. **Figure 5** illustrates in a flowchart an alternate prior art method for coupling the slider and micro-actuator to the head suspension. **Figure 6** illustrates a slider tilt problem cured by embodiments of the present invention. **Figure 7** illustrates a slider gap problem cured by embodiments of the present invention. **Figures 8a-c** illustrate a definition of the pitch static attitude (PSA) and the roll static attitude (RSA). **Figures 9a-d** illustrate one embodiment of a loading fixture used to mount the slider and micro-actuator to the suspension according to the present invention. **Figures 10a-d** illustrate one embodiment of a loading fixture used to mount the slider to the suspension according to the present invention. **Figure 11** illustrates, in a flowchart, one embodiment of a process for mounting the slider and micro-actuator to the suspension according to the present invention. **Figure 12** illustrates, in a flowchart, one embodiment of a process for adjusting the slider and micro-actuator on the suspension according to the present invention.

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6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Are claims 1-7 and 12-19 rendered obvious under 35 U.S.C. §103(a) over Nemoto (U.S. Patent No. 6,284,073) (hereinafter “Nemoto”), Kamigama (U.S. Pub. No. 2002/0029461) (hereinafter “Kamigama”) and Johnson (U.S. Patent No. 6,640,423) (hereinafter “Johnson”)?

7. ARGUMENT

A. Claims 1-7 and 12-19 are not rendered obvious under 35 U.S.C. §103(a) by Nemoto, Kamigama and Johnson.

Claims 1-7 and 12-19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nemoto, Kamigama, and Johnson. Nemoto discloses a core slider mounting apparatus and a core slider mount method that can mount a core slider with high accuracy independently of variations in the manufacture of gimbals and jig disks. Kamigama generally discloses mounting a magnetic head slider with at least one thin-film magnetic head element on a suspension. (See Abstract). Johnson generally discloses an improved apparatus and method for the placement and bonding of a die on a substrate. (See Abstract).

i. “A Pitch Static Attitude and Roll Static Attitude (PSA/RSA) Monitor”

The Examiner asserts that Nemoto describes a position correction means which is capable of functioning as both a pitch static attitude and roll static attitude (PSA/RSA) monitor, citing item 30 – column 10, lines 25-51). See Office Action dated 12/15/2005.

Applicants respectfully traverse these rejections, in part, because neither Nemoto, Kamigama, Johnson nor any combination thereof teaches or suggests *a pitch static attitude and roll static attitude (PSA/RSA) monitor* to take a first measurement of the PSA and RSA of the

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micro-actuator on the suspension, as recited in claims 1 and 12. In fact, Nemoto never mentions the term “micro-actuator”, or any variation thereof, and is concerned only with attaching the core slider to the gimbals. Nemoto states:

As shown in FIG. 6, a *position correcting means 30* is connected to the work table 4. The means 30 *corrects a positioning error* between the adhering portion of *the gimbals 21 and the core slider 24*.

The correction control section 17 corrects a positioning error between the adhering portion of the gimbals 21 and the core slider 24 based on position information of the adhering portion of the gimbals 21 obtained as posture information of the gimbals 21 by the lower CCD camera 16 and posture information of the core slider 24 obtained by the upper camera 15. (See Nemoto, Col. 10, lines 25-28 and 33-39) (*emphasis added*)

In other words, Nemoto does not monitor the PSA/RSA of the *micro-actuator* on the suspension, but is instead concerned with correcting a positioning error *between the core slider 24 and the adhering portion of the gimbals 21*. Applicants submit the since “position correcting means” described in Nemoto is not directed to taking “a first measurement of the pitch static attitude and roll static attitude of the micro-actuator on the suspension”, as recited in the claims and described in embodiments of the present application, it is inadequate to support a proper §103(a) rejection.

The Examiner further asserts that Kamigama discloses monitoring both pitch static attitude or roll static attitude, but does not include any specific citation to the Kamigama reference. See Office Action dated 12/15/2005, page 3. Instead, the Examiner supports the rejection by summarily stating it would have been obvious to one of ordinary skill in the art to have monitored these factors because they “affect the final desired electrical properties”. See *id.*

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Kamigama states:

[0044] Then, *the suspension* from which the defective magnetic head slider was removed is checked with respect to its load (load gram), *its attitude angle (static pitch angle, static roll angle)* and others so as to judge whether this suspension can be reused or not (step S6). If necessary, the load and the attitude angle may be appropriately adjusted. Then, a visual inspection for checking whether there is any damage in the appearance of the suspension or not is executed (step S7). (*emphasis added*) (See Kamigama, page 3, paragraph 0044).

Applicants submit that, as admitted by the Examiner, Kamigama merely describes the relevance of static pitch angles and roll angles in slider design *as a general concept*. It does not describe the utilization of a “*a pitch static attitude and roll static attitude (PSA/RSA) monitor to take a first measurement of the pitch static attitude and roll static attitude of the micro-actuator on the suspension*”, as described in embodiments of the present application.

The Examiner relies on Kamigama, responding to Applicants assertion by stating:

In response to Applicant's argument that Nemoto does not disclose that the PSA and RSA of the microactuator is not being controlled and bonded, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. (See Office Action dated 12/15/2005, pp.6-7).

However, as argued above, Kamigama does not describe what structure (if any) is used to check the static pitch and roll attitude angle of the suspension. Contrary to the Examiner's position, there is a significant structural difference between the claimed invention and the prior art in that the cited references do not disclose a PSA/RSA *monitor* to take a first measurement of the PSA and RSA of the *micro-actuator* on the suspension (as specifically recited in embodiments of the present application). A limitation describing a PSA/RSA monitor is not

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merely a functional limitation, but a specific structural limitation that must be shown in the cited prior art in order to support a proper rejection.

It is improper for the Examiner to combine a “monitor” from Nemoto directed toward monitoring a completely dissimilar metric (positioning between the core slider 24 and the adhering portion of the gimbals 21 – see above) with the *general concept* of pitch and roll attitudes described in Kamigama to support a rejection. Otherwise, the general idea of any metric relevant to a design could be designed with any (including an inapplicable) concept of a monitor to support an obviousness rejection. Clearly, this cannot be. In order to support a proper §103(a) rejection, the cited references must show some teaching, suggestion or motivation to include a *monitor of pitch and roll static attitudes* as described in embodiments of the present application. Neither Kamigama, Nemoto nor the combination thereof describes at least these limitations.

ii. “A Gap Monitor”

Further, neither Nemoto, Kamigama, Johnson nor any combination thereof disclose a gap monitor to take a second measurement of a gap between the micro-actuator and the suspension as recited in claims 1 and 12. The Examiner does not claim that Kamigama and Johnson recite this feature, and instead relies on Nemoto. *See* Office Action dated 12/15/2005, page 3. It cites the optical camera 7 of Nemoto as allegedly describing the relevant limitations. Applicants disagree.

The optical camera 7 of Nemoto is located above the worksite where the slider is coupled to the work piece, out of position for determining any gap. Moreover, the Nemoto reference does not include any description of the use of the camera 7 to monitor a gap between the

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micro-actuator and the suspension, and the Examiner does not cite such to any description either.

In describing the optical camera 7, column 6 lines 50-55 of the Nemoto reference state:

The optical camera 7 optically recognizes the posture position or orientation of the work piece set on the work table 4. That is, the optical camera 7 detects the posture of the work piece set on the work table 4, and thus serves as means for obtaining posture information of the work piece. (emphasis added)

Therefore, the Nemoto reference itself states that the optical camera is not directed toward monitoring gaps between the suspension and the micro-actuator, but rather utilized to recognize the posture information of *the work piece set relative to the work table*.

Applicants submit that, contrary the to the Examiner's assertion, the optical camera is not "capable of monitoring the gap". See Advisory Action. In order to make such an assertion, it must be supported by the underlying reference. It is not. Therefore, the optical camera of Nemoto is inadequate to support a proper §103(a) rejection, and the rejection should be withdrawn.

iii. "A Rotatable Positioning Tool"

Additionally, neither Nemoto, Kamigama, Johnson nor any combination thereof disclose a rotatable positioning tool to hold the micro-actuator and the slider in a position relative to the suspension for attachment and to adjust the position of the micro-actuator and the slider in response to the first and second measurements as recited in claims 1 and 12. The Examiner does not claim that Kamigama recites this feature, and instead relies on Johnson, combining Johnson with Nemoto. See Office Action dated 12/15/2005, page 3. The Examiner asserts that Johnson discloses that it is known to use a rotational holder when bonding dies (a slider being considered one form of a die) to substrates. However, similar to above, it does not include any specific citation. The Examiner argues that Johnson discloses that such rotational movements allow for

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the proper *placement* of the die to the substrate, thereby ensuring proper functioning. Applicants disagree.

Element 12 of Johnson is described as a “pickup station”. See column 6, lines 50-51.

Both the positioning catches 12 of Nemoto and the die holder of Johnson are for a single item (a slider for Nemoto and a die for Johnson). The rotatable positioning tool of the present invention holds two items, requiring a different configuration. Further, the movable die holder of Johnson does not place the dies into position *for attachment* (as specifically recited in embodiments of the present application), rather is used to place the dies in position for *pickup* by a transfer arm. In order to support a proper rejection, the cited reference must describe “a *rotatable positioning tool* to hold the micro-actuator and the slider in a position relative to the suspension *for attachment*” (e.g., claim 1). Since the “pickup station” is not directed toward the attachment at all, and the Johnson reference as whole does not describe any such element that is, the Johnson reference is inadequate to support a proper rejection.

Moreover, contrary to the Examiner’s assertion, the “a rotatable positioning tool” is not a functional limitation, but rather a specific, structural limitation included in embodiments of the present application. To summarily dismiss this structural element as allegedly “functional” is both improper and incorrect. The rejection should be withdrawn.

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CONCLUSION

Therefore, as at least all of these elements are missing from the cited prior art, claims 1 and 12 should be allowed. Applicants respectfully submit that claims 2-7 and 13-19 are allowable as depending from allowable base claims 1 and 12 given the arguments above.

Appellants therefore respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's decision rejecting claims 1-7 and 12-19 and direct the Examiner to pass the case to issue.

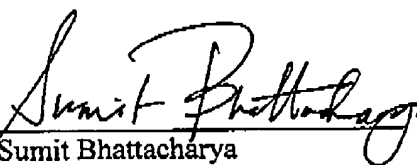
The Examiner is hereby authorized to charge the appeal brief fee of \$500.00 and any additional fees which may be necessary for consideration of this paper to Kenyon & Kenyon Deposit Account No. 11-0600.

Respectfully submitted,

KENYON & KENYON LLP

Date: May 15, 2006

By:


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APPENDIX

(Brief of Appellants Ming Gao YAO
U.S. Patent Application Serial No. 10/817,568)

8. CLAIMS ON APPEAL

1. A system, comprising:
 - a loading fixture to load and support a suspension when a micro-actuator coupled to a slider is attached;
 - an adhesive controller to apply and cure an adhesive substance to the suspension;
 - a pitch static attitude and roll static attitude (PSA/RSA) monitor to take a first measurement of the pitch static attitude and roll static attitude of the micro-actuator on the suspension;
 - a gap monitor to take a second measurement of a gap between the micro-actuator and the suspension; and
 - a rotatable positioning tool to hold the micro-actuator and the slider in a position relative to the suspension for attachment and to adjust the position of the micro-actuator and the slider in response to the first and second measurements.
2. The system of claim 1, wherein the rotatable positioning tool is a vacuum nozzle system with a stepped nozzle opening shaped to the micro-actuator and the slider.
3. The system of claim 1, wherein the rotatable positioning tool adjusts a level of the micro-actuator and the slider.

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4. The system of claim 1, wherein the gap monitor is a camera system.
5. The system of claim 1, wherein a base plate of the suspension is used as a reference point for said measurements.
6. The system of claim 1, wherein the micro-actuator is coupled to the suspension by the adhesive substance and said measurements are made prior to curing the adhesive substance.
7. The system of claim 1, wherein the position of the micro-actuator is adjusted in response to said measurements prior to curing the adhesive substance.
- 8.-11 (Cancelled)
12. A positioning device, comprising:
 - a pitch static attitude and roll static attitude (PSA/RSA) monitor to take a first measurement of a pitch static attitude and roll static attitude of a micro-actuator on a suspension;
 - a gap monitor to take a second measurement of a gap between the micro-actuator and the suspension; and
 - a rotatable positioning tool to hold the micro-actuator in a position relative to the

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suspension for attachment and to adjust the position of the micro-actuator in response to said measurements.

13. The positioning device of claim 12, wherein the rotatable positioning tool is a vacuum nozzle system with a stepped nozzle opening to better grasp the micro-actuator.

14. The positioning device of claim 12, wherein the rotatable positioning tool is adjustable thirty degrees left and right along an axis normal to the head suspension.

15. The positioning device of claim 12, wherein the PSA/RSA monitor is a laser measurement system.

16. The positioning device of claim 12, wherein the gap monitor is a camera system.

17. The positioning device of claim 12, wherein a base plate of the suspension is used as a reference point for measurements.

18. The positioning device of claim 12, wherein the micro-actuator is coupled to the suspension by an epoxy and at least one of the first and second measurements are taken prior to curing the epoxy.

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19. The positioning device of claim 12, wherein the position of the micro-actuator is adjusted in response to at least one of the first and second measurements prior to curing the epoxy.

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9. EVIDENCE APPENDIX

No Further evidence has been submitted with this Appeal Brief.

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10. RELATED PROCEEDINGS APPENDIX

Per Section 2 above, there are no related proceedings to the present Appeal.